

**PERFORMANCE AND DURABILITY IMPROVEMENT IN COMPRESSOR  
STRUCTURE DESIGN**

**ABSTRACT OF THE DISCLOSURE**

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An integral assembly that may improve control over thermal and mechanical behaviors of assembly structures during various transient operation conditions is disclosed. The integral assembly comprises a continuous ring disposed coaxial with, and orthogonal to a central axis, the continuous ring comprising a plurality of surfaces, the plurality of surfaces having a continuous outer surface and a continuous inner surface; the plurality of surfaces being characterized by a continuous cross section having a first cross sectional dimension longitudinally disposed parallel to the central axis; the plurality of surfaces comprising a bell mouth surface in physical communication with a compressor shroud surface; the compressor shroud surface being in physical communication with a diffuser surface; and the diffuser surface being in physical communication with the bell mouth surface. The integral assembly comprising a compressor shroud is also provided. An auxiliary power unit including the integral assembly, and a method of making the integral assembly are also disclosed.

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